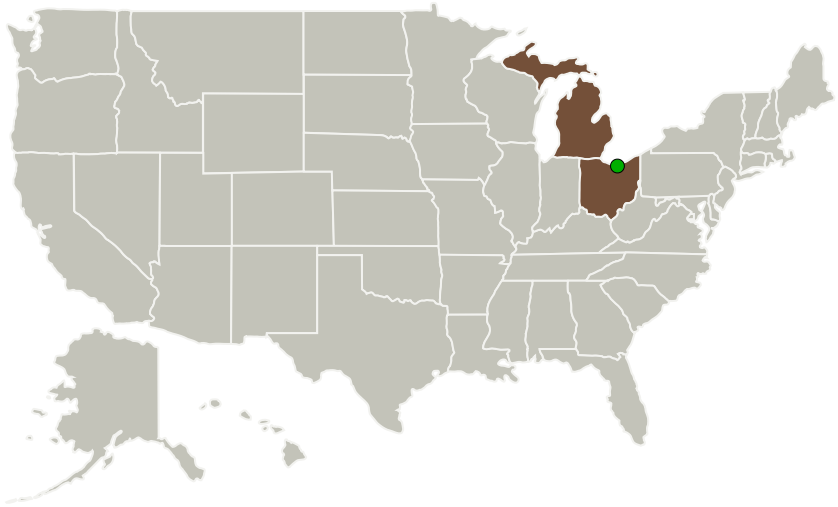
A low cost, secure radio communications system for UAVs, Phase I

Completed Technology Project (2015 - 2015)

Project Introduction

sci_Zone, Inc is seeking to develop the LinkStar-AV, an inexpensive, secure, and reliable satellite based radio system for Unmanned Aircraft Systems (UAS). The LinkStar-AV architecture treats the radio system as a secure node on the internet through the GlobalStar satellite communications network, providing continuous coverage between the UAS and ground. Control and monitoring is provided by an adapted version of our QS/Vehicle Management System (VMS), which is used on a range of commercial aircraft and certified under DO-178B (Level D). The on-board flight processor of the LinkStar-AV radio manages software via the Xen Hypervisor providing an added level of reliability, safety and security from malicious attacks. For the Phase I research program we shall develop the prototype of the LinkStar-AV1p hardware, implement a secure link to stream data from the UAS to the QS/VMS ground control station via LinkStar, and develop a prototype of the communications and control software for use on UAS. We will also update QS/VMS ground server and flight software as required to allow it to work with the LinkStar-AV1p radio. The goal by the end of the Phase I is to demonstrate the technology and its feasibility, and present a plan for implementation and commercialization.

Primary U.S. Work Locations and Key Partners



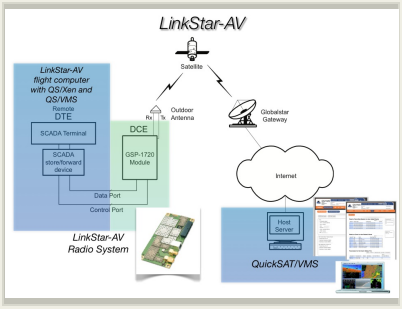


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Table of Contents

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
sci_Zone, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Holland, Michigan
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Michigan	Ohio

Project Transitions

June 2015: Project Start

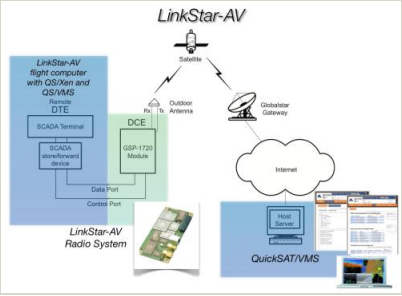
December 2015: Closed out

Closeout Summary: A low cost, secure radio communications system for UAV s, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138730)*

Images



Briefing Chart Image
A low cost, secure radio communications system for UAVs, Phase I
(https://techport.nasa.gov/image/131303)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
sci_Zone, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

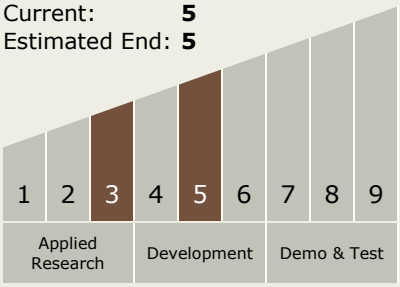
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Andrew D Santangelo

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



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Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.1 Integrated Systems and Ancillary Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System